



NATIONAL HIGHWAY INSTITUTE

Training Solutions for Transportation Excellence

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January 2003

Dear Customers and Colleagues:

The transportation sector continues to be impacted by the changing economy, technology, demographics, and numerous other factors. Nearly 50 percent of the current workforce at Federal, State and local levels will be eligible to retire in the next 10 years. The transportation community faces a daunting task of addressing these challenges with less people in a rapidly changing environment.

Focusing on the FHWA vision to "improve transportation for a strong America," NHI has placed particular emphasis on delivering courses to advance the Administrator's "vital few" goals of safety, congestion mitigation and environmental stewardship and streamlining. Toward this goal, our staff at NHI worked very hard last year to help sustain the core competencies of the transportation workforce, and to offer new skills and knowledge necessary to address emerging needs in transportation. Specifically, to advance current practices, incorporate new technologies, and to keep abreast of current federal policies, we developed 21 new courses and updated 17 of our existing courses. Moreover, in coordination with the FHWA headquarters offices, we delivered over 600 training sessions to more than 15,400 customers from federal, state, local agencies, as well as the private sector, academia and international affiliate organizations.

In our effort to leverage and utilize scarce training resources more efficiently, we have initiated and strengthened a number of partnerships. For instance, we have partnered with the University of Rhode Island Transportation Center (URITC), National Transit Institute (NTI), American Association of State Highway and Transportation Officials (AASHTO), International Right-of-Way Association (IRWA), Transportation Curriculum Coordination Council (TCCC) and other organizations to develop and deliver leading edge training.

Our Dwight David Eisenhower Transportation Fellowship Program, which is aimed at attracting and retaining the nation's brightest minds in transportation, awarded 120 fellowships to students and faculty in FY 2002, up 22 percent compared to FY 2001. The increase was accomplished mainly by leveraging program funds through partnerships and cost sharing with universities.

The challenge in 2003 is to continue to improve our training development and delivery services, better utilize our limited resources and coordinate with our traditional and emerging partners in the transportation community. To identify opportunities to improve and perhaps expand our services, we have visited customers and partners in 17 states and plan to continue this activity in the remaining states to ensure that we deliver your desired training needs. We hope the face-to-face interactions will give us a better reading on changing training needs, strengthen current partnerships, and build new ones to help meet our customers' needs and advance our Administrator's goals associated with the "vital few."

We appreciate your continued support, and we look forward to better serving you in 2003.

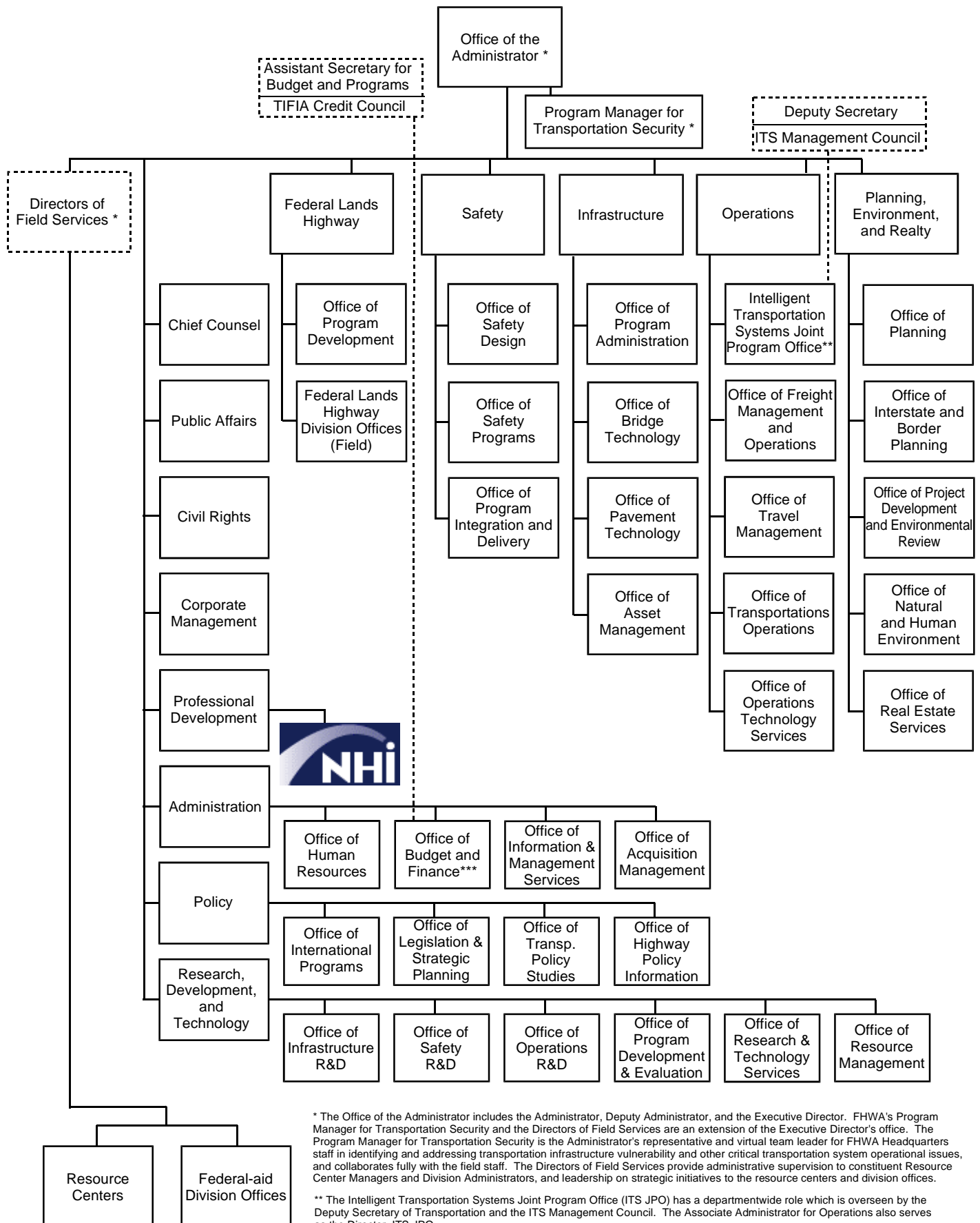
Sincerely yours,



Moges Ayele, Ph.D.
Director
National Highway Institute

FEDERAL HIGHWAY ADMINISTRATION

Effective September 4, 2002



* The Office of the Administrator includes the Administrator, Deputy Administrator, and the Executive Director. FHWA's Program Manager for Transportation Security and the Directors of Field Services are an extension of the Executive Director's office. The Program Manager for Transportation Security is the Administrator's representative and virtual team leader for FHWA Headquarters staff in identifying and addressing transportation infrastructure vulnerability and other critical transportation system operational issues, and collaborates fully with the field staff. The Directors of Field Services provide administrative supervision to constituent Resource Center Managers and Division Administrators, and leadership on strategic initiatives to the resource centers and division offices.

** The Intelligent Transportation Systems Joint Program Office (ITS JPO) has a departmentwide role which is overseen by the Deputy Secretary of Transportation and the ITS Management Council. The Associate Administrator for Operations also serves as the Director, ITS JPO.

*** The Transportation Infrastructure Finance and Innovation Act Joint Program Office (TIFIA JPO), a multi-modal organizational element, is located in FHWA's Office of Budget and Finance. The TIFIA JPO has a departmentwide role which is overseen by the Assistant Secretary for Budget and Programs and the TIFIA Credit Council.



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Other FHWA Training

The FHWA Core Business Units, Support Offices and Resource Centers routinely provide a wide array of seminars, workshops and technical assistance to stakeholders upon request and as travel funds permit. Many of these are at no cost; others have a nominal fee, collected through NHI. The following is a listing of offerings currently available. Please contact the designated staff member for further information.

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General Information



FY2002 at a Glance

The National Highway Institute (NHI) is the external training arm of the Federal Highway Administration (FHWA). Last year, we developed and delivered many courses to meet our customers' training needs in technical and policy areas. In addition, we partnered with numerous organizations to coordinate training resources, identify new training needs in the transportation community, and develop and deliver courses to meet those needs.

Here are some of our accomplishments in FY2002:

-  We delivered over 600 training sessions to more than 15,400 participants from federal, state, local agencies, as well as the private sector, academia and international affiliate organizations.
-  We developed 21 new courses and updated 17 courses in various topics, as shown on the next page.
-  NHI and the University of Rhode Island Transportation Center (URITC) established a partnering agreement to promote a greater coordination of efforts to build the professional capacity of transportation practitioners in the Northeast, and to advance NHI's and URITC common interest of training and educating the transportation workforce.
-  Our Dwight David Eisenhower Transportation Fellowship Program, which is aimed at attracting and retaining the nation's brightest minds in transportation, has awarded 120 fellowships to students and faculty in 2002, up 20 percent compared to FY 2001.
-  To underscore the agency's vital few goals of environmental stewardship and congestion mitigation, NHI is working in collaboration with Federal Transit Administration, the Environmental Protection Agency, the Department of Energy and the National Transit Institute on several new course developments: Air Quality and Transportation Planning, The Congestion Mitigation and Air Quality Program: Purpose and Practice and Erosion and Sediment Control.
-  Development is underway and should be completed by June 2003 of two bridge design examples based on AASHTO's Load and Resistance Factor Design (LRFD) code. One is for a steel girder bridge and the other for a pre-stressed concrete girder superstructure bridge. Both examples will include extensive commentary to support the design decisions.
-  We are offering "web-based" distance learning courses on "Real Estate Acquisition Under the Uniform Act," National ITS Architecture, and AASHTO Roadside Design Guide.
-  In Malawi, we conducted train-the-trainer sessions for instructor development and asphalt pavement recycling, to share our technology and best practices with our international partners and to develop master trainers who can train new instructors and sustain the training program in sub-Saharan African countries.
-  The new state-of-the-art computer training facility at NHI in Arlington, Virginia is open and available free of charge for Department of Transportation (DOT) sponsored training.

New/Updated Courses in FY2002

Total New Courses = 21

Structures

130078A Fracture Critical Inspection Techniques for Steel Bridges

Materials and Pavements

131064A Introduction to Mechanistic Design for New and Rehabilitated Pavements

131100A Pavement Smoothness: Use of Inertial Profiler Measurements for Construction Quality Control

Geotechnical

132069A Driven Pile Foundation Inspection - Module 1 of Geotechnical Inspector Qualification

132070A Drilled Shaft Foundation Inspection - Module 2 of Geotechnical Inspector Qualification

Hydraulics

135010A River Engineering for Highway Encroachments

135048A Countermeasure Design for Bridge Scour and Stream Stability (Pilot Tested)

Intelligent Transportation Systems

137005A Intelligent Transportation Systems (ITS) Telecommunications Overview

137022A CORSIM Traffic Simulation Model Training

137024A Introduction to Systems Engineering for Advanced Transportation

137025A Recommended Practices for Operations of Advanced Transportation Systems

137026A/C Project Management for Advanced Transportation Systems

137029A Turbo Architecture Software Training

152068A ITS Deployment Analysis System (IDAS)

Environment

134054A Design and Implementation of Erosion and Sediment Control

142045A Pedestrian Facility Design

142046A Bicycle Facility Design

Statewide Planning

151039A Applying Spatial Data Technologies for Transportation Planning

Metropolitan Planning

152071A Estimating Regional Mobile Source Emissions

Highway Safety

380032C AASHTO Roadside Design Guide

380068A Tools For Integrating Highway Safety into Design

Total Updated Courses = 17

Structures

130055A Safety Inspection of In-Service Bridges

134029A Bridge Maintenance Training

Materials and Pavements

131032A Hot Mix Asphalt Construction

131044A Hot Mix Asphalt Production Facilities

131045A Hot Mix Asphalt Materials, Characteristics, and Control

131050A Asphalt Pavement Recycling Technologies

Hydraulics

135046A Stream Stability and Scour at Highway Bridges

135056A Culvert Design

135067A Practical Highway Hydrology

Intelligent Transportation Systems

137013A Using the National ITS Architecture for Deployment

137019A Intelligent Transportation Systems (ITS) Software Acquisition

Environment

142005A NEPA and Transportation Decision Making

Highway Safety

380003A Design and Operation of Work Zone Traffic Control

380032A AASHTO Roadside Design Guide - Infrastructure

380034A Design, Construction, and Maintenance of Highway Safety Appurtenances and Features

380060A Work Zone Traffic Control for Maintenance Operations on Rural Highways

380063A Construction Zone Safety Inspection

What is NHI?

The National Highway Institute (NHI) is the technical training organization of the Federal Highway Administration (FHWA). NHI's mission is to provide proactive leadership, expertise, resources, and information to improve the quality of the U.S. highway system in order to enhance economic growth, quality of life, and the environment. NHI develops and administers transportation-related training and education programs that assist in applying new technologies to the planning, design, construction, maintenance and rehabilitation of our nation's transportation infrastructure.

NHI Training Program

Since its inception in 1970, NHI has developed courses in over 200 topics, and delivered over 11,000 training sessions to some 350,000 students, principally from the highway community. Currently, 135 courses are offered through the NHI catalog. On average, NHI delivers over 500 training sessions to 15,000 students per year in the U.S. and abroad.

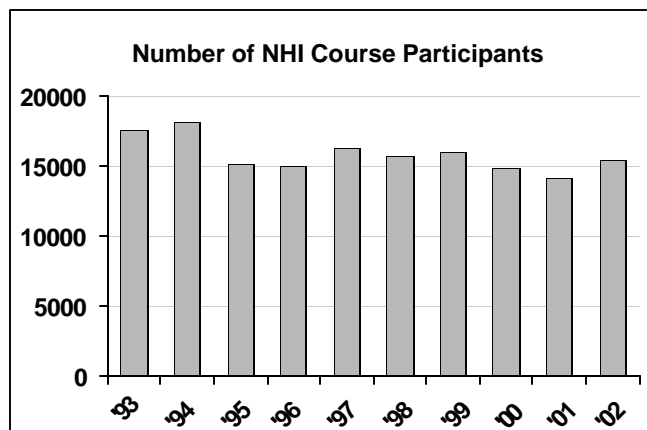
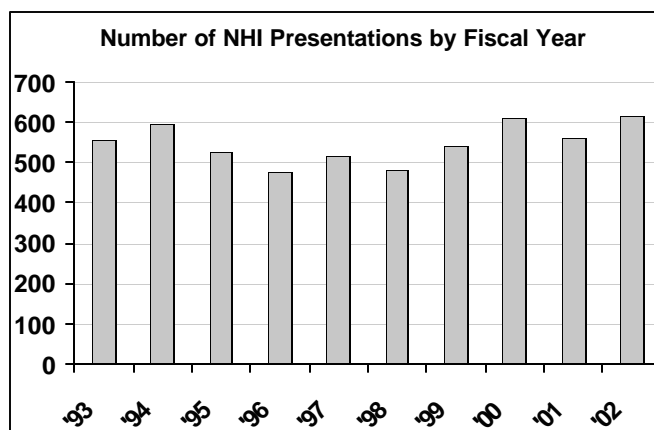
Numbers tell only part of the story. NHI courses are crucial not only in developing core competencies and new skills of its customers, but also transferring leading technology and current transportation policies throughout the nation and abroad.

Training Needs in Changing Transportation

Recent studies show that changing economic, demographic, technological and other factors are impacting the whole transportation sector. One critical factor is the changing workforce, driven by retirements, high turnovers and competition for workers. As much as 50 percent of the baby boomers at federal, state and local levels will be eligible to retire in the next 10 years.

These changes certainly impact the professional capacity of the transportation workforce, in terms of sustaining traditional knowledge and skills and acquiring new ones to meet the demands of changing transportation.

FHWA and NHI strive to address changing training needs of our customers, through partnerships, incorporation of new learning technology, and better management of resources.

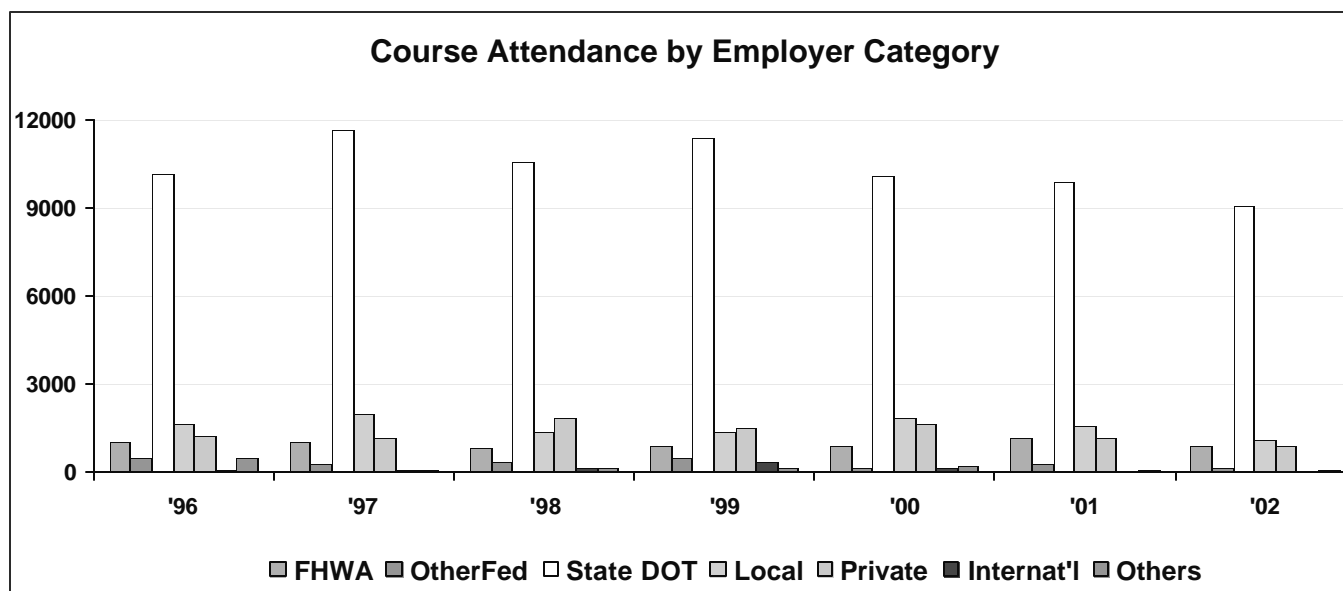


NHI Customers

Our customers are grouped as follows:

- **Federal, State and Local Surface Transportation Agencies** – This group represents most of our customer base and reaches about 15,000 people per year.
- **Private Transportation Providers, Firms and Associations** – NHI is expanding its efforts to provide private sector organizations, especially those that work with public agencies, with instruction and training materials.
- **Universities and Other Academic Institutions** – NHI provides technical course materials for inclusion in undergraduate and graduate curricula, and collaborates with community colleges, technical schools, and secondary and grade schools to identify the transportation professionals of tomorrow.
- **International Transportation Community** – NHI develops and coordinates highway training in the U.S. and other countries for international agencies, organizations, groups, and individuals. Courses are primarily conducted in English, although special arrangements can be made to present the training in other languages.

By far, the largest customer group is the state departments of transportation (DOTs). Out of some 15,000 total training attendees in FY2002, 70 percent were from state DOTs, followed by locals at 11 percent, and private sector and FHWA each at 8 percent.

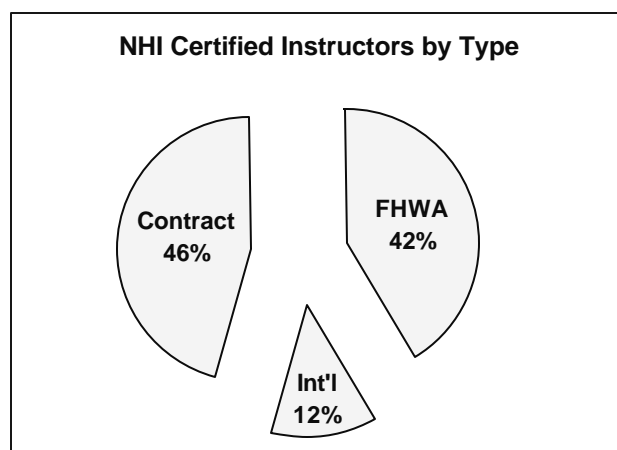
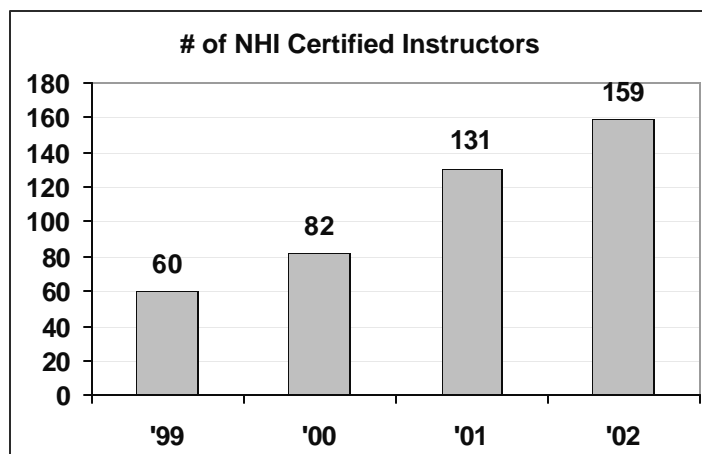


Interactive Training

NHI targets its training to the adult learner. NHI incorporates the latest adult learning/instruction principles in its courses and builds in clear learning objectives to ensure knowledge and skills development. This provides a learner-centered classroom and stimulates useful interaction between the students and instructors. To provide our course participants with the highest quality and most effective, consistent training experiences, NHI has designed an Instructor Development Course (IDC). The IDC course is designed according to a set of competencies compiled by the American Society for Training and Development (ASTD).

NHI Instructors

As of September 30, 2002, NHI has 159 fully certified instructors. The certified instructor pool contains 73 contract, 20 international and 66 FHWA instructors.



Programs Under FHWA OPD

NHI is a program under the FHWA Office of Professional Development (OPD), OPD serves as an “in-house coordinator” for training and learning, providing access to assistance and expertise to all FHWA employees, as well as our external partners and customers. OPD’s mission is to:

- serve as an advocate for promoting professional development throughout the transportation community;
- serve as a catalyst to strengthen the tie between training/learning and performance;
- provide a strategic direction for professional development by developing and delivering a coordinated program;
- identify and implements new technologies in learning; and
- form partnerships and alliances for learning.

OPD is structured into three programs: *National Highway Institute (NHI)*, *Affiliate Programs*, and *Universities and Grants Program*. These programs work in concert to assure that a workforce is available to meet future transportation needs, and provide the current transportation workforce with necessary skills to continually improve the quality of our nation’s highway system and its intermodal connections.

Affiliate Programs

The Affiliate Programs’ mission is to promote education, training, and technology sharing among local, state, national, and international transportation partners. These programs will enhance existing partnerships and develop new partnerships to create a continuous learning environment for the transportation community. The Affiliate Programs is an umbrella program encompassing the Local Technical Assistance Program (LTAP), Partnership Program, International Program, and Workforce Development Initiatives.

Local Technical Assistance Program (LTAP)

There are 58 LTAP centers, one in each state, Puerto Rico, and seven regional centers serving American Indian tribal governments. LTAP’s mission is to foster a safe, efficient, environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, including institutional and program building activities. LTAP’s primary customers are some 38,000 local agencies and tribal governments. LTAP’s technology transfer centers provide more than 5,000 training sessions to over 120,000 participants per year.

Partnership Program

The Partnership Program is responsible for maintaining the relationships with the American Public Works Association (APWA) and the National Association of County Engineers (NACE) and carrying out the professional development aspects of all partnerships as well as outreach to industry, affiliates and other members of the transportation community.

International Program

The FHWA’s Office of International Programs coordinates and arranges for international training and professional development activities. These activities inform the U.S. transportation community of technological and innovative programs abroad, promote U.S. transportation expertise internationally and increase technology sharing between the U.S. and the international community.

Workforce Development Initiatives

With as much as 50 percent of the Federal, State and local workforce eligible to retire within the next several years recruiting and retaining a highly qualified workforce is a priority. Workforce studies and forums for information exchange identify effective strategies and successful practices in career awareness, recruitment, training, professional development and retention.

Universities and Grants Programs

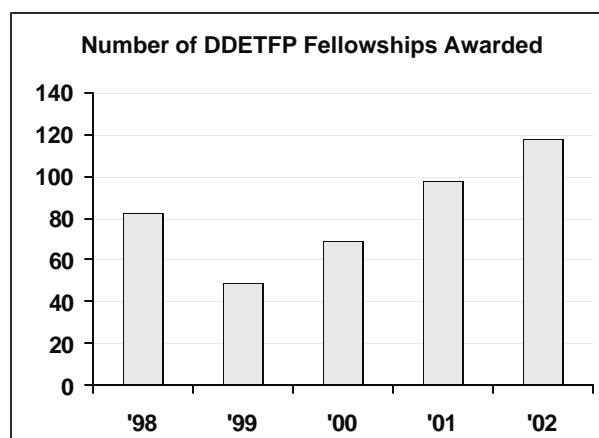
The mission of the Universities & Grants Programs (U&GP) is to promote the benefits of transportation education and encourage the pursuit of transportation research among university students and faculty. U&GP is primarily responsible for the administration of the Dwight David Eisenhower Transportation Fellowship Program (DDETFP). The DDETFP is congressionally mandated by legislation (ISTEA and TEA-21) and funded at \$2 million annually, dates back to 1992. U&GP works cooperatively with more than 800 colleges and universities (including HBCUs, HSIs and TCs) and more than 100 transportation related disciplines.

U&GP's primary objectives are to:

- enhance FHWA university-based programs and other academic programs;
- provide fellowships, internships and partnerships;
- conduct workforce analyses related to retention, recruitment, and diversification;
- conduct research on DOT and FHWA's transportation related academic programs.

Dwight David Eisenhower Transportation Fellowship Program

The U&GP is directly responsible for the administration of student and faculty fellowships and grants for the Dwight David Eisenhower Transportation Fellowship Program (DDETFP). The Intermodal Surface Transportation Efficiency Act (ISTEA) established the DDETFP in 1991. In FY2002, 120 fellowships were awarded – an increase of 20% over FY 2001. Of these 120 awards, 23 were awarded to Minority Institutions of Higher Education.



Eisenhower Nationally-Competed Awards

Eisenhower Graduate (GRAD) Fellowships enable students to pursue master's degrees or doctorates in transportation-related fields at the university of their choice. Twenty GRAD fellowships were awarded in FY2002, totaling over \$750 thousand.

Eisenhower Grants for Research Fellowships (GRF) acquaint undergraduate and graduate students with transportation research, development, and technology transfer activities at U.S. Department of Transportation facilities.

Eisenhower Faculty Fellowships (FF) provide faculty in transportation fields with opportunities to enhance and update their transportation knowledge, including attendance at conferences, courses, seminars and workshops. In FY2002, 4 faculty fellowships were awarded.

Eisenhower Campus-Based Awards

Eisenhower Historically Black Colleges and Universities (HBCU) Fellowships provide HBCU students with additional opportunities to enter into careers in transportation. In FY2002, 68 fellowships were awarded to HBCU recipients.

Eisenhower Hispanic Serving Institutions (HSI) Fellowships provide HSI students with additional opportunities to enter into careers in transportation. Twenty HSI fellowships were awarded in FY2002.

Eisenhower Tribal Colleges Fellowships (TCF) identify transportation-related activities and provide student and faculty fellowship opportunities at Tribal Colleges.

Registration and Coordination

This section contains information about course registration, fees, and the award of Continuing Education Units (CEUs).

1. Course Requests

- a. To sponsor NHI courses, the "On-Site Course Request" form (FHWA 1530) should be submitted directly to NHI. A copy of this form is included in the back of this catalog. Photocopies are accepted. Or, submit your course request online via www.nhi.fhwa.dot.gov/registration.asp. The sponsoring organization may send an information copy of the form to the local FHWA division office at the address found in **Appendix A**. The FHWA division office will be sent a copy of the confirmation once the course has been confirmed by NHI. Requested dates may be shown on the form, but no course is officially confirmed until the sponsoring organization receives confirmation from NHI.
- b. To register for a distance learning course use the URL www.nhi.fhwa.dot.gov/registerdl.asp and follow the instructions provided on the screen. On-line registration for distance learning courses requires a configuration of MS Internet Explorer (IE) 5.0 or higher with 128-encryption. You cannot use Netscape. The version 6.0 of IE has been tested with FHWA applications and has been approved by the FHWA Information Systems Security Office. For FHWA employees, it can be downloaded from <http://staffnet.fhwa.dot.gov/software.htm#ieexplore>. For others, it can be downloaded from <http://www.microsoft.com/windows/ie/downloads/ie6/download.asp>

2. Course Fees

NHI charges on the basis of individual participants to be consistent with other training organizations with which NHI has established partnerships. Generally our course fees are based on \$200 per participant per day. To assure that courses are not under-subscribed, a minimum number of paid participants – generally 20 – is required. Please note that no charges will be assessed to the sponsoring organizations for FHWA personnel attending NHI classes. We will continue to recover the full cost of delivery for international presentations, handled on a case-by-case basis.

After a careful assessment of the projected delivery costs as compared to our current fee structure, we found it necessary to make a modest fee increase of 15 percent to maintain our program of quality training.

Following is the fee structure for NHI courses delivered after January 1, 2003. We are making every attempt to align our costs by making our development and delivery process more efficient.

Course Length		Per Person Fee
1	day	\$ 200.00
2	days	\$ 270.00
2 ½	days	\$ 335.00
3	days	\$ 400.00
3 ½	days	\$ 460.00
4	days	\$ 530.00
4 ½	days	\$ 600.00
5	days	\$ 650.00
10	days	\$1,400.00

Fees for distance learning courses vary from course to course. Please refer to the course information found in the NHI training course description.

3. Payment

a. Domestic Customers

NHI will send an invoice to the sponsoring organization upon completion of the course. NHI accepts checks, money orders, and credit cards. Checks and money orders should be made payable to the *Federal Highway Administration*.

b. International Customers

NHI will fax an invoice to the individual or organization upon completion of the course. Cashiers' checks, international money orders, and credit cards are accepted forms of payments. Special arrangements will have to be made for wire transfers, and customers must ensure that they pay all related bank fees. All cashiers' checks and international money orders should be payable in U.S. dollars to the *Federal Highway Administration*.

c. Distance Learning Courses

NHI accepts checks, purchase orders and credit cards for distance learning courses. If a purchase order is used, names must be submitted to Danielle Mathis-Lee before individual registration begins. Follow the on-line screen instructions when registering via the URL www.nhi.fhwa.dot.gov/registerdl.asp. For additional information, please contact Danielle Mathis-Lee at (703) 235-0528, (703) 235-0577 (fax), or danielle.mathis-lee@fhwa.dot.gov

4. Refund

A refund may be obtained for a distance-learning course within 48 hours after a user has received a Userid and Password. Please submit an e-mail request for refund to Danielle Mathis-Lee at danielle.mathis-lee@fhwa.dot.gov. Your reimbursement will be processed in the order it is received. If you paid with a credit card, the reimbursement should show up within two billing cycles.

5. Participation

Potential sponsors of NHI courses are encouraged to survey the training needs of other entities outside their own organization while they determine their internal training needs. In some cases, the combined needs may be sufficient to warrant sponsoring a course for which there otherwise would not be enough interest to justify the expense. In other cases, where there is more than enough interest to fill one class, two classes could be justified and all of the staff would not be away from the office at the same time. Or, classes could be held at different locations and thereby save on travel expenses. In many cases where contractors are working for State agencies, unless the State includes the contractors in their training activities, they may not have access to the unique, state-of-the-practice training offered by NHI. By attending training together, both sides receive the same training, they benefit from the added breadth of classroom discussions, and the participants establish closer relationships by working together on class exercises.

Course sponsors may charge participants from outside their organizations a fee in order to recover all or part of the NHI course fee, plus other costs associated with hosting the course. Otherwise, checks, money orders or other generally accepted forms of payment from individual course participants will be accepted as part of the course fee, so long as they are made payable to the *Federal Highway Administration*. Such payments may be forwarded to NHI as soon as they are received with the amount of the invoice reduced accordingly; or they can be held and submitted as part of the total payment upon invoice to the sponsoring organization.

a. FHWA Employees

NHI training is provided to sponsoring agencies at a subsidized rate. Therefore, space for up to 15 percent of the maximum number of participants specified for a given course is reserved for FHWA employees to attend without charge. FHWA employees should use the following procedure to attend NHI courses:

- i. Registration of FHWA employees to attend NHI courses is controlled by the FHWA Course Coordinator in the State/Division Office whose is presenting the training. The names of these coordinators are listed in the Learning and Development System (LADS) and they are usually the FHWA Division Office training coordinator. Registration in LADS for NHI courses will enable the FHWA Division Office training coordinator to forward the names of registered employees on to the appropriate State Coordinator. **FHWA employees should enroll in NHI courses using LADS. Do NOT contact the Sponsoring State Coordinator directly.** Registration in LADS keeps the information current by showing the availability of training slots. Also, in those circumstances where slots are not available, LADS has the capability to maintain a waiting list and notify individuals when sessions are scheduled or slots are available.
- ii. Not later than two weeks prior to the starting date of the NHI course, the FHWA Course Coordinator in the State/Division Office in which the training is being presented, should inform the sponsoring organization of the final number of FHWA employees who will be attending. If the FHWA spaces are not filled within two weeks of the course starting date, the sponsoring organization may fill these spaces with other participants.
- iii. FHWA employees may take distance learning courses free of charge. Follow the on-line screen directions via URL www.nhi.fhwa.dot.gov/registerdl.asp.

b. Domestic Customers

Individuals located within the United States who wish to attend an NHI training course should contact the Local Coordinator listed in the Course Schedule section of the NHI web page. The Local Coordinator determines whether the course is open to outside participants and can provide specific information, such as available space, course location and cost.

c. International Customers

NHI will arrange the participation of international customers in training courses in the United States. In addition, NHI provides assistance to international organizations wishing to purchase standard NHI training courses on a variety of technical subjects. These courses can be tailored to specific needs of the organization at an additional cost. For more information about training courses for international participants, please contact Roger Dean at (703) 235-0550 or roger.dean@fhwa.dot.gov.

6. Local Coordinators' Checklist

Appendix C of this catalog includes a Local Coordinators' Checklist that should be useful for those people who are setting up the training site. This appendix offers suggestions that will stimulate thinking about the physical facilities and what is needed to create an effective learning environment. The person assigned Local Coordinator responsibilities should review this checklist, and add to it as additional requirements arise.

7. CEUs and PDH

The course descriptions include Continuing Education Units (CEUs) that will be awarded to course participants who have successfully completed these NHI courses. According to the International Association for Continuing Education and Training (IACET):

One Continuing Education Unit (CEU) is ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

The CEU shown for the courses in our catalog has been established based on a typical course presentation with 6 hours of actual instruction time or 0.6 CEUs, per day. Adjustments to the course length to match local work hours or to accommodate increased/decreased emphasis on certain topics or for travel on field trips etc. may affect the actual number of CEUs that should be awarded. The local coordinator for the sponsoring agency of an NHI course, and the course instructors, should determine the actual contact hours of instruction and CEUs to be awarded. Each agency is encouraged to maintain its own records for CEUs awarded to their course participants.

Professional Development Hour (PDH). The conversion of CEU's to PDH units is as follows:

One CEU is equal to 10 PDH units

Each agency is encouraged to maintain its own records for the PDH units awarded to their course participants. NHI does not issue a certificate of completion with PDHs .

8. Distance Learning

Distance learning continues to receive a great deal of attention from us. Our distance learning mission is to work with our partners to maximize the efficiency and effectiveness of instructional delivery while providing the highest quality learning opportunities to assist in the development of tomorrow's workforce. This training solution is ideal when we need to reach more customers, and it is more economical than the traditional classroom instruction.

9. Reimbursement for Domestic Customers Only

The *Transportation Equity Act for the 21st Century* (TEA-21) increased the amount and expanded the eligibility of NHI course costs for reimbursement from the federal-aid apportionment to the states. **Appendix B** lists the level of funding apportioned to states that can be used to fund training activities, including NHI training courses. The legislation – with changes highlighted in bold – reads:

*(4) **Set-Aside; Federal Share** – Not to exceed ½ of 1 percent of the funds apportioned to a State under section 104(b)(3) for the surface transportation program shall be available for expenditures by the State transportation department for the payment of not to exceed 80 percent of the cost of tuition and direct educational expenses (excluding salaries) in connection with the education and training of employees of State and local transportation agencies in accordance with this subsection. [Travel and subsistence are now eligible for reimbursement.]*

In addition, the Surface Transportation and Uniform Relocation Assistance Act of 1987 modified Section 151 of Title 23, United States Code, to establish a National Bridge Inspection Program. Funds made available under this section of Title 23 may also be used for payment of training costs for bridge inspectors.



NHI Training Courses



Geotechnical

Course Number: 132012A

Course Title: Soils and Foundations Workshop

Fee	Length
\$530 Per Participant	4 Days (CEU: 2.4 Units)

Class Size: Minimum 20; Maximum 30

Revised 2000 - Available for scheduling. The sponsoring organization is responsible for providing access to a materials laboratory for demonstration purposes. Course runs from 1:00 PM on Monday through noon on Friday.

Description:

This course is geared toward the practicing engineer in the foundation field, routinely dealing with soil and foundation problems, who has little theoretical background in soil mechanics or foundation engineering. The course takes a project-oriented approach whereby the soils input to a fictitious bridge project is followed from conception to completion. A visit to a laboratory is used to illustrate basic soil concepts in typical major project phases. In each phase of the fictitious project, the soil concepts will be developed into specific foundation designs and recommendations. Classroom presentation includes a variety of exercises to verify achievement of learning objectives. Each participant will take away a notebook containing a complete foundation design, completed exercises, and enough reference data to independently complete other related activities.

Objectives: Upon completion of the course, participants will be able to:

- Identify the minimum level of geotechnical input needed in various project phases of a highway project.
- Identify equipment and procedures used to implement a subsurface investigation of soil and rock conditions.
- Develop a visual description of soils native to the host state.
- Identify location and capabilities of the geotechnical laboratory facilities and personnel in the host state.
- List the basic soil test procedures and application of soil test results to highway projects.
- Demonstrate basic procedures used for both settlement and stability analysis, and identify design solutions to stability and settlement problems.
- Demonstrate procedures used for determining bearing capacity and settlement of spread footing foundations.
- Demonstrate basic skill in the design and construction management of driven pile foundations.
- Identify driven pile foundation construction equipment and procedures for construction inspection.
- Demonstrate basic skill in interpreting static load test results.
- Identify format and provide minimum content for an adequate foundation report.

Target Audience:

Geotechnical specialists, bridge designers, highway designers, construction engineers, maintenance engineers and drillers and especially the first-line supervisors involved in the design of highway structures and embankments. The greatest impact will be achieved by convincing structural, design, and construction engineers to use procedures from this course as a guide for routine geotechnical work. One of the major benefits is to give engineers an appreciation of activities outside their specialties that influence, or are influenced by, the work of the geotechnical specialist. All attendees should be encouraged to attend the entire course. The one exception is for drillers who could be invited to attend only the first phase of the course (Monday PM and Tuesday AM).

	Name	Phone	Email
Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
NHI Training Program Manager	Larry Jones	(703) 235-0523	larry.jones@fhwa.dot.gov
Technical Information	Silas Nichols	(410) 962-2460	silas.nichols@fhwa.dot.gov

Geotechnical

Course Number: 132013A

Course Title: Geosynthetics Engineering Workshop

Fee	Length
\$200 Per Participant	1 Day (CEU: 0.6 Units)
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

Description:

A separate 1-day Summary course and a 3-day Design and Construction course are available. These courses provide training on the correct, cost-effective utilization of geosynthetics in transportation applications. State-of-the-practice utilization of geosynthetics in highway works and developments are reviewed. The use of geotextiles, geogrids, pavement edge drains, drainage composites, erosion control materials, sediment control materials, and geomembranes are examined. Applications of filtration, drainage, temporary and permanent erosion control, sediment control, roadway separation, roadway reinforcement, roadway subgrade improvement, pavement overlays, embankments over soft foundations, mechanically stabilized earth walls, mechanically stabilized earth slopes, geomembrane containment ponds, and geomembrane pavement encapsulation are covered.

The 1-day Summary course provides an introduction to geosynthetics, focusing on identifying, specifying, testing, installing, and inspecting geosynthetic installations.

The 3-day Design and Construction course provides a review of design procedures, expands on the material of the 1-day Summary course and includes workshop problems, student exercises, and addresses all aspects of geosynthetics use.

Objectives: Upon completion of the course, participants will be able to:

- Recognize potential geosynthetic applications for use in transportation facilities construction and maintenance.
- Differentiate between types of geosynthetics and the primary and secondary functions they perform in respective applications.
- Determine if geosynthetics are a feasible, cost-effective option for construction or maintenance of transportation earthworks.
- Specify procedures for and oversee geosynthetic installations.
- Locate references on geosynthetic materials and geosynthetic applications.
- Prepare conceptual and basic designs for filtration, drainage, temporary and permanent erosion control, sediment control, roadways, pavement overlays, embankments over soft foundations, mechanically stabilized earth walls, mechanically stabilized earth slopes, and geomembrane transportation applications. [3 day only]
- Select appropriate material property and design parameter test methods for specific geosynthetic projects, and differentiate between index and performance tests/properties. [3 day only]
- Develop appropriate materials and construction specifications for geosynthetic projects. [3 day only]
- Determine the need for site specific monitoring or special inspection schemes to ensure compliance with design. [3 day only]

Target Audience:

1-Day Summary Course - Federal, State and local transportation personnel (bridge, hydraulic, pavement, geotechnical, construction, and maintenance engineers, and construction inspectors and technicians) involved with construction and maintenance of transportation facilities that include earthwork construction.

3-Day Design & Construction Course - Federal, State and local transportation personnel (bridge, hydraulic, pavement, geotechnical, construction, and maintenance engineers, and construction inspectors and technicians) involved with design and/or construction of transportation facilities that incorporate earthwork.

In addition, public agency and private sector construction engineers and project inspectors responsible for

Geotechnical

installation, construction monitoring and inspection of geosynthetics installations can attend either course. There are no prerequisites, although prior attendance of NHI course 132012 - Soils and Foundations Workshop is recommended.

	Name	Phone	Email
Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
NHI Training Program Manager	Larry Jones	(703) 235-0523	larry.jones@fhwa.dot.gov
Technical Information	Jerry DiMaggio	(202) 366-1569	jerry.dimaggio@fhwa.dot.gov

Geotechnical

Course Number: 132014A

Course Title: Drilled Shafts

Fee	Length
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

The participants will receive a comprehensive Reference Manual on drilled shaft construction and design for performing detailed designs of drilled shafts, writing construction specifications and evaluating the performance of the contractor. The Participant Workbook is intended to be a source of practical day-to-day information.

Description:

Drilled shaft is an alternate type of deep foundation that may be more cost-effective than driven piles in bridge piers at river crossings, retrofit operations, high-mast lighting, earth retaining structures, single column piers and similar applications. This course provides participants with all aspects of designing, installing and monitoring of drilled shafts. It covers uses, advantages and disadvantages of drilled shafts for transportation structure foundations; general requirements for subsurface investigations for drilled shafts; construction methods for drilled shafts; construction case histories; construction specifications; principles of design of drilled shafts for axial and lateral loading; expansive soils, downdrag and similar effects; load testing; inspection; integrity testing; repair and retrofit of defective shafts; and cost estimation.

Objectives: Upon completion of the course, participants will be able to:

- Define a drilled shaft, as distinguished from other types of foundations.
- Categorize the subsurface conditions that affect the construction of drilled shafts.
- Identify the soil parameters that must be measured in order to design drilled shafts.
- Describe the various drilling rigs and tools that are available to construct drilled shafts under varied subsurface conditions.
- Recognize the basic features of drilling aids such as casings and drilling slurries and the reasons for certain fundamental requirements for these aids.
- Recognize the basic requirements for concrete and reinforcing steel for drilled shafts and distinguish those requirement from those for other parts of the structure.
- Design drilled shafts for axial loading in simple soil and rock profiles.
- Demonstrate a general understanding of the elements of designing drilled shafts for lateral loads.
- Demonstrate an understanding of the need for load tests and available methods for performing them.
- Formulate the basic elements of construction specifications for drilled shafts.
- Discuss the rudiments of construction inspection, post-construction integrity testing for drilled shafts, and repair methods for defective drilled shafts.
- Estimate costs for drilled shafts.

Target Audience:

Geotechnical engineers, bridge designers, and resident engineers. The course embraces both construction and design, and it is important that all participants attend all lessons, not just those in the immediate area of interest. A key issue is how the details of construction affect the way in which a drilled shaft should be designed and how the intent of the design affects inspection. Participants in the course are expected to have a degree in engineering for which they have passed an undergraduate course in soil mechanics and/or have successfully completed NHI Course 132012 - Soils and Foundations Workshop. This course is not intended for field or laboratory personnel without a background in engineering.

	Name	Phone	Email
Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
NHI Training Program Manager	Larry Jones	(703) 235-0523	larry.jones@fhwa.dot.gov
Technical Information	Barry Berkovitz	(404) 562-3693	barry.berkovitz@fhwa.dot.gov

Geotechnical

Course Number: 132016A

Course Title: Geotechnical and Foundation Engineering

Fee	Length
TBD	20 Days (CEU: 12 Units)

Class Size: Minimum 20; Maximum 30

Under development.

Description:

This advanced course which is currently under development, will address all aspects of Geotechnical and Foundation Engineering. The course is divided into eleven stand-alone modules:

- 132031A - Module 1 - Subsurface Investigations (3.0 days)
- 132032A - Module 2 - Geotechnical Contracting and Quality Assurance/Quality Control (0.5 day)
- 132033A - Module 3 - Soil Slopes and Embankments (2.5 days)
- 132034A - Module 4 - Ground Improvement Techniques (3.0 days)
- 132035A - Module 5 - Rock Slopes (2.0 days)
- 132036A - Module 6 - Earth Retaining Structures (2.5 days)
- 132037A - Module 7 - Shallow Foundations (1.0 day)
- 132038A - Module 8 - Deep Foundations (3.0 days)
- 132039A - Module 9 - Geotechnical Earthquake Engineering (1.0 day)
- 132040A - Module 10 - Geotechnical Aspects of Pavements (0.5 day)
- 132041A - Module 11 - Geotechnical Instrumentation (1.0 day)

A state-of-the-art manual for each module will be provided as a practical reference for later use.

Instructors for the course are nationally and internationally recognized experts in each topic area. The course includes class lectures, field subsurface investigation and testing demonstrations, laboratory demonstrations, practical student design problems, discussions of case histories, and extensive use of microcomputers. A university campus is the proposed training facility for the full four-week course.

Objectives: Upon completion of the course, participants will be able to:

- Update the knowledge of experienced geotechnical and foundation specialists.
- Provide new practicing geotechnical and foundation specialists with a practical and comprehensive understanding of all geotechnical engineering involved in the development of a surface transportation project.
- Provide a quick learning experience in the diverse technical topic areas which are required of the transportation specialist who is responsible for the selection, design and construction of geotechnical transportation features.
- Demonstrate the timing, scope and details of geotechnical and foundation engineering as they relate to the development of transportation-related projects from the planning and scoping phase through post construction evaluations.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are or will be involved in the research, design, construction and maintenance of geotechnical features on surface transportation facilities. An undergraduate degree in engineering, geology or equivalent engineering experience in the highway/transportation field, including a good academic background in mathematics and science is desirable.

	Name	Phone	Email
Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
NHI Training Program Manager	Larry Jones	(703) 235-0523	larry.jones@fhwa.dot.gov
Technical Information	Jerry DiMaggio	(202) 366-1569	jerry.dimaggio@fhwa.dot.gov

Geotechnical

Course Number: 132021A

Course Title: Driven Pile Foundations - Design and Construction

Fee	Length
\$530 Per Participant	4 Days (CEU: 2.4 Units)

Class Size: Minimum 20; Maximum 30

Description:

This course covers the practical application of pile technology and addresses current methods of driven pile technology, with the emphasis on data interpretation and decision making issues common to real life construction projects. The course on basic design and construction covers all aspects of driven pile technology, including such topics as: subsurface investigation, pile selection, economic analysis, static design analysis (single pile and pile group behavior under compression, tension and lateral loading, pile settlement, negative skin friction) specifications and contracting documents, as well as construction monitoring (pile inspection, dynamic driving formulas, wave equation analysis, dynamic testing), static methods of pile load testing, driven pile installation equipment and accessories. This course also covers: definition and design procedures of aggressive subsurface conditions; the driven computer program for calculation of static pile capacity; design procedures for downdrag, scour, squeeze, and heave; plugging of open pile sections; and group design for lateral and uplift loads. Classroom presentations include workshops, student exercises and sample problems.

Objectives: Upon completion of the course, participants will be able to:

- Demonstrate methods of driven pile foundation design.
- Demonstrate methods of driven pile construction materials and installation equipment.
- Describe the timing and scope of the involvement of foundation specialists as a project evolves from concept through completion.
- Perform a foundation economic analysis and determine the need for a driven pile foundation.
- Recognize the pile type selection process and the advantages and disadvantages of common driven pile types.
- Compute driven single and pile group capacity to resist compression, tensile and lateral loads.
- Demonstrate knowledge of dynamic pile formulas, wave equation, dynamic testing, and static load testing.
- Discuss the components of structural foundation reports and controlling issues of specifications and contracting documents as related to a successful construction project.
- Describe the concept and project influence of drive ability, pile refusal, minimum and estimated pile tip elevations, soil setup and relaxation.

Target Audience:

The course material has been developed for attendance by geotechnical specialists, bridge engineers, construction engineers, consultant review specialists and advanced level technicians. This course is suitable for attendance by entry level and experienced engineers and advanced level technicians. Attendees should have a basic knowledge of subsurface investigation methods and the general aspects of foundation design and construction.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
NHI Training Program Manager	Larry Jones	(703) 235-0523	larry.jones@fhwa.dot.gov
Technical Information	Peter Osborn	(401) 528-4550	peter.osborn@fhwa.dot.gov

Geotechnical

Course Number: 132022A

Course Title: Driven Pile Foundations - Construction Monitoring

Fee	Length
\$270 Per Participant	2 Days (CEU: 1.2 Units)

Class Size: Minimum 20; Maximum 30

Description:

This course provides information on current methods of driven pile technology with emphasis on data interpretation and decision-making issues common to driven pile installation and monitoring. The course covers the following areas: specifications, contracting issues, pile installation, monitoring and inspection. Application and interpretation of the wave equation, and dynamic and static pile load testing methods are highlighted, with an emphasis on the practical issues related to pile monitoring and acceptance on typical construction projects. Construction material includes: pile capacity verification by formula, wave equation, dynamic test or static test; performance and interpretation of compression, tension, and lateral load test; new load testing devices, the Osterberg Cell and StatNamic; operation and inspection of pile hammers including new hydraulic hammers; and troubleshooting of pile hammer operation and pile installation problems. (Refer to course 132021 - Driven Pile Foundations - Design and Construction for additional background information.)

Objectives: Upon completion of the course, participants will be able to:

- Demonstrate methods of driven pile construction monitoring and inspection practices and procedures.
- Demonstrate methods of pertinent driven pile specification and contracting document issues.
- Describe wave equation, dynamic testing and static testing results in terms of their application and interpretation on construction projects.
- Discuss the basic components and differences between various types of pile driving systems, associated installation equipment, pile splices, and pile tip attachments.
- Interpret a set of driven pile plan details and specifications.
- Inspect a driven pile project with knowledge and confidence.

Target Audience:

Public and private sector engineers and advanced level technicians involved in and responsible for the specification and construction monitoring of driven pile foundations. The course material has been developed for geotechnical specialists, bridge engineers, construction engineers, consultant review specialists and advanced level technicians. This course is suitable for attendance by entry level and experienced engineers and higher level technicians. Basic knowledge of subsurface investigation methods is desirable.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Technical Information	Peter Osborn	(401) 528-4550	peter.osborn@fhwa.dot.gov

Geotechnical

Course Number: 132031A

Course Title: **Geotechnical and Foundation Engineering: Module 1 - Subsurface Investigations**

Fee	Length
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

Description:

This course is the first in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand-alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 1 is offered as a separate 3-day course covering the latest methods and procedures in the planning, execution and interpretation of the various subsurface investigation methods and the development of appropriate soil and rock design parameters for engineering applications. Topics include: the geotechnical specialist's role in subsurface investigations; exploration methodologies; exploratory equipment types and their suitability for various subsurface conditions; the use of in-situ testing and geophysical surveys for subsurface characterization; the handling, transportation and storage of soil and rock samples; and laboratory testing techniques and interpretation of data. Contracting for soil and rock investigations, correlation of soil and rock properties, and preparation of clear and concise geotechnical reports are also covered. Classroom instruction includes student exercises and sample problems to reinforce course objectives.

Objectives: Upon completion of the course, participants will be able to:

- Recognize the importance of performing an adequate subsurface investigation.
- Plan and execute a subsurface exploration program for a typical surface transportation project.
- Use existing information in the planning of the investigation program.
- Apply appropriate in-situ testing procedures based upon the expected subsurface conditions and obtain high quality soil and rock samples for laboratory testing.
- Assign appropriate laboratory testing procedures for determining soil and rock design parameters.
- Interpret the results of laboratory tests and determine soil and rock parameters to be used in design.
- Summarize results of subsurface investigation in a concise geotechnical investigation report.

Target Audience:

FHWA, State, and local transportation agency employees, college and university faculty, and consultant engineers who are or will be involved in the planning, execution, review and interpretation of subsurface investigations. An undergraduate degree in geology, engineering geology, civil engineering or equivalent engineering experience in the highway/transportation field is desirable.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Technical Information	Jerry DiMaggio	(202) 366-1569	jerry.dimaggio@fhwa.dot.gov
	Peter Osborn	(401) 528-4550	peter.osborn@fhwa.dot.gov

Geotechnical

Course Number: 132032A

Course Title: Geotechnical and Foundation Engineering: Module 2 - Geotechnical Contracting and Quality Assurance/Quality Control

Fee	Length
\$200 Per Participant	0.5 Day (CEU: 0.3 Units)

Class Size: Minimum 20; Maximum 30

Development delayed.

Description:

This course is the second in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand-alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 2 is offered as a separate half-day course covering technical and administrative aspects associated with the contracting and quality assurance/quality control of geotechnical design and construction monitoring.

Objectives: Upon completion of the course, participants will be able to:

- Develop proper contract specifications for geotechnical work required for a surface transportation project.
- Provide meaningful input when participating in related contractual activities such as value engineering, partnering, etc.
- Plan and implement appropriate quality assurance/quality control procedures for both in-house and contracted work.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers who are or will be involved in the contracting and construction of geotechnical work. An undergraduate degree in geology, engineering geology, civil engineering or equivalent engineering experience in the highway/transportation field is desirable.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Technical Information	Jerry DiMaggio	(202) 366-1569	jerry.dimaggio@fhwa.dot.gov

Geotechnical

Course Number: 132033A

Course Title: **Geotechnical and Foundation Engineering: Module 3 - Soil Slope and Embankment Design**

Fee	Length
\$335 Per Participant	2.5 Days (CEU: 1.5 Units)

Class Size: Minimum 20; Maximum 30

The participants will receive a comprehensive Reference Manual on investigation, design, construction and mitigation of soil slopes and embankments for practicing highway/geotechnical engineers, and will be referred to from time to time during the course so that the participants can become familiar with its contents. The Participant Workbook contains copies of visual aids and student exercises that closely follow the PowerPoint presentations being made by the instructors. The student exercises promote interaction in the classroom, and illustrate the basic principles and analyses.

Description:

This course covers important aspects associated with the design and construction of soil slopes and embankments. It is intended to provide transportation earthwork professionals with knowledge to recognize potential soil slope/embankment stability and deformation problems in transportation projects, and to develop the necessary skills to design and evaluate soil slopes and embankments, and consider the construction and inspection implications. The course embraces both design and construction, and it is important for all participants to attend all lessons, not just those in their immediate area of interest.

This course is the third in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand-alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development).

Objectives: Upon completion of the course, participants will be able to:

- Recognize potential failure modes or deformation types for soil slopes and embankments.
- Describe common highway soils slope and embankment problems.
- List the factors that affect the performance of soil slopes and embankments (i.e., geometry, surface water, groundwater, soil parameter, geological factors, etc.).
- Understand basic assumptions of limit equilibrium slope stability analysis.
- Identify the potential failure modes for soil slopes and the type of analysis required to evaluate stability of the slope.
- Determine the stability of a slope using slope stability charts.
- Recognize the major design consideration for embankments constructed using earth fill, rock fill, and lightweight fill.
- List the design steps necessary for the design of an embankment over compressible foundation soil.
- List the common causes/triggering mechanisms for landslides/slope instabilities.
- List appropriate stabilization methods.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are involved in the analysis, design, construction, maintenance, and remediation of soil slopes and embankments on surface transportation facilities. An undergraduate degree in engineering or equivalent engineering experience in the highway/transportation field is desirable.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Technical Information	Sam Mansukhani	(708) 283-3550	sam.mansukhani@fhwa.dot.gov

Geotechnical

Course Number: 132034A

Course Title: **Geotechnical and Foundation Engineering: Module 4 - Ground Improvement Techniques**

Fee	Length
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

Under development for 2004.

Description:

This course is the fourth in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand-alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 4 is offered as a separate three-day course covering important design and construction aspects associated with ground improvement techniques. Topics on ground improvement techniques include: grouting, vertical drains, stone columns, lightweight fill, vibro compaction, dynamic compaction, deep soil mixing and other new and innovative concepts.

Objectives: Upon completion of the course, participants will be able to:

- Assess the suitability of various improvement techniques for particular ground conditions.
- Describe aspects to consider in the selection, design and implementation of ground improvement techniques.
- Implement the techniques to improve problem soil conditions.
- Design and implement construction monitoring programs for ground improvement projects.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers who are or will be involved in the geotechnical aspects of the design and construction of transportation facilities through problem soils. An undergraduate degree in geology, engineering geology, civil engineering or equivalent engineering experience in the highway/transportation field is desirable.

	Name	Phone	Email
Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Geotechnical

Course Number: 132035A

Course Title: Geotechnical and Foundation Engineering: Module 5 - Rock Slopes

Fee	Length
\$270 Per Participant	2 Days (CEU: 1.2 Units)

Class Size: Minimum 20; Maximum 30

The participants will receive a comprehensive Reference Manual (FHWA-HI-99-007) and the accompanying Student Exercise (FHWA-HI-99-036). The Reference Manual is a comprehensive reference on investigation, design, and construction of rock slopes for highway/geotechnical engineers, and is geared to the practicing engineer who is involved with rock slope design and stabilization, but may not have the complete theoretical background. The Student Exercises (FHWA HI-99-036) are designed to promote interaction in the classroom, and to illustrate the basic principles and analyses. Solutions to the exercises are included with each exercise.

Description:

This training course is currently offered as an individual stand alone two day short course covering the design and construction aspects associated with rock slopes. The course presents appropriate geological investigation techniques, shear strength theories and determination of rock strength, and various design methods for rock slopes with different failure mechanisms. Other topics include: rock blasting, rock slope stabilization methods and contracting issues. Classroom instructions include the discussion of sample problems and case histories involving rock slope analyses and design.

This Rock Slopes course is the fifth in a series of 11 modules constituting the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand alone two-day short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Objectives: Upon completion of the course, participants will be able to:

- Describe the basic principles of rock slope design.
- Plan and execute a geological investigation including geologic mapping.
- Perform appropriate in-situ and laboratory strength tests.
- Determine rational design rock strength parameters by proper evaluation of in-situ and laboratory test data along with appropriate rock strength correlations.
- Identify the failure mechanisms associated with rock slopes and apply appropriate design methodologies.
- Design effective rock-fall protection and slope stabilization measures.
- Design a monitoring program for cut slopes.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are or will be involved in the design, excavation and stabilization of rock slopes. An undergraduate degree in geology, engineering geology, civil engineering, or equivalent engineering experience in the highway/transportation field is desirable.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Geotechnical

Course Number: 132036A

Course Title: **Geotechnical and Foundation Engineering: Module 6 - Earth Retaining Structures**

Fee	Length
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

Description:

This course is the sixth in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 6 is offered as a separate three-day course covering the selection, design, construction and performance of earth retaining structures used for support of fills or excavations. Factors that affect wall selection are discussed, including contracting approaches with an emphasis on required bidding documents for each approach. Class discussions will include design procedures and case histories, demonstrating the selection, design and performance of various earth retaining structures.

Objectives: Upon completion of the course, participants will be able to:

- Recognize potential applications for retention structures used in transportation facilities.
- Select the most technically appropriate and cost effective type of retaining wall for the application from a thorough knowledge of available systems.
- Examine and select appropriate material properties, soil design parameters and earth pressure diagram.
- Prepare conceptual and basic (i.e., for simple geometry) designs, using appropriate design methods, factors of safety, earth pressure diagrams and field verification methods and be able to appraise contractor submitted designs.
- Select appropriate specification/contracting method(s) and prepare contract documents.
- Demonstrate a clear understanding of retaining wall construction and maintenance.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are or will be involved in the design, excavation and stabilization of rock slopes. An undergraduate degree in geology, engineering geology, civil engineering, or equivalent engineering experience in the highway/transportation field is desirable.

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Technical Information	Barry Siel	(303) 716-2191	barry.siel@fhwa.dot.gov

Geotechnical

Course Number: 132037A

Course Title: **Geotechnical and Foundation Engineering: Module 7 - Shallow Foundations**

Fee	Length
\$270 Per Participant	2 Days (CEU: 1.2 Units)

Class Size: Minimum 20; Maximum 30

The participants will receive a comprehensive Reference Manual on investigation, design, and construction of shallow foundations for highway/geotechnical engineers that should be referred to from time to time during the course so that the participants can become familiar with its contents. The student exercises book was developed as an interactive teaching tool for the course.

Description:

This course provides transportation earthwork professionals with the necessary skills to design shallow foundations for transportation applications, and consider the construction and inspection implications on the design. The course will be of most benefit to geotechnical engineers, engineering geologists, foundation designers, project engineers, and highway/bridge engineers who are involved in design and construction of foundations for surface transportation projects. Presentation of the course is in an interactive format so that the participants are actively involved in the learning experience.

This Shallow Foundations course is the seventh in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development).

Objectives: Upon completion of the course, participants will be able to:

- Recognize potential failure modes or deformation types for soil slopes and embankments.
- Develop the ability to judge when shallow foundations should be considered.
- List the failure modes of shallow foundations.
- Determine the bearing capacity of shallow foundations on soils and rocks.
- Calculate vertical stress distribution below a shallow foundation.
- Determine the primary consolidation settlement of shallow foundations on cohesive soils.
- Determine the settlement of shallow foundations on cohesionless soils.
- Identify problematic soils that may be encountered.
- List the soil improvement techniques that may be used to improve the performance of shallow foundations.
- List ground improvement techniques that may be used to improve the performance of shallow foundations.
- Describe procedures for construction inspection and performance monitoring of shallow foundations.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are involved in the analysis, design, construction, maintenance, and remediation of soil slopes and embankments on surface transportation facilities. An undergraduate degree in engineering or equivalent engineering experience in the highway/transportation field is desirable.

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Geotechnical

Course Number: 132038A

Course Title: Geotechnical and Foundation Engineering: Module 8 - Deep Foundations

Fee	Length
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

Development delayed.

Description:

This course is the eighth in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 8 is offered as a separate three-day course covering the design and construction of deep foundations.

Objectives: Upon completion of the course, participants will be able to:

- Assess the suitability of various deep foundation alternatives for particular soil and rock conditions.
- Select a deep foundation system.
- Analyze and design the selected deep foundation system considering different loading conditions.
- Explain the important aspects of various static and dynamic testing methods.
- Explain the important aspects of various construction considerations.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are or will be involved in the design, evaluation and construction of foundations. An undergraduate degree in engineering, geology or equivalent engineering experience in the highway/transportation field is desirable.

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Technical Information	Jerry DiMaggio	(202) 366-1569	jerry.dimaggio@fhwa.dot.gov

Geotechnical

Course Number: 132039A

Course Title: **Geotechnical and Foundation Engineering: Module 9 - Geotechnical Earthquake Engineering**

Fee	Length
\$335 Per Participant	2.5 Days (CEU: 1.5 Units)

Class Size: Minimum 20; Maximum 30

Temporarily not available.

Description:

This course is the ninth in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 9 is offered as a separate course covering the seismic design issues associated with geotechnical engineering.

Objectives: Upon completion of the course, participants will be able to:

- Assess the suitability of various deep foundation alternatives for particular soil and rock conditions.
- Select a deep foundation system.
- Analyze and design the selected deep foundation system considering different loading conditions.
- Explain the important aspects of various static and dynamic testing methods.
- Explain the important aspects of various construction considerations.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are or will be involved in the design, evaluation and construction of foundations. An undergraduate degree in engineering, geology or equivalent engineering experience in the highway/transportation field is desirable.

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	Jerry DiMaggio	(202) 366-1569	jerry.dimaggio@fhwa.dot.gov

Geotechnical

Course Number: 132040A

Course Title: Geotechnical and Foundation Engineering: Module 10 - Geotechnical Aspects of Pavements

Fee	Length
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

Under development for late 2003 or early 2004.

Description:

This course is the tenth in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 10 is offered as a separate three-day course covering the geotechnical issues associated with pavement design.

Objectives: Upon completion of the course, participants will be able to:

- Explain the geotechnical parameters affecting the performance of different types of pavements.
- Provide proper geotechnical recommendations associated with the design of pavements.
- Evaluate and explain the impact of unsuitable subgrades on pavement performance and design of appropriate stabilization measures for pavement subgrades.
- Explain the geotechnical aspects of construction including selection and proper use of compaction equipment.

Target Audience:

Engineers and geologists who are or will be involved in the design, evaluation and construction of pavements. An undergraduate degree in engineering, geology or equivalent engineering experience in the highway/transportation field is desirable.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Technical Information	Sam Mansukhani	(708) 283-3550	sam.mansukhani@fhwa.dot.gov

Geotechnical

Course Number: 132041A

Course Title: **Geotechnical and Foundation Engineering: Module 11 - Geotechnical Instrumentation**

Fee	Length
\$270 Per Participant	2 Days (CEU: 1.2 Units)

Class Size: Minimum 20; Maximum 30

Description:

This course is the last in a series of 11 modules for the four-week advanced level NHI training course 132016 - Geotechnical and Foundation Engineering. It is offered as either a stand alone short course, in conjunction with other separate modules within NHI course 132016, or as part of the overall four-week NHI course 132016 (under development). The four-week course will cover all aspects of Geotechnical and Foundation Engineering as related to the design and construction of surface transportation facilities.

Module 11 is offered as a separate two-day course covering geotechnical instrumentation. The course is designed to provide the student with the necessary knowledge and skills to plan, select, and implement instrumentation programs in geotechnical features for construction monitoring and performance verification. The course will discuss measurement tools, including recommendations for a systematic and complete approach to planning monitoring programs. Recommendations for the selection of proper instrumentation for various types of construction are presented. Field tasks covered include: calibration, maintenance and installation of instrumentation, collection of instrumentation data, processing and presentation of collected data, interpretation of processed data and reporting of results.

Objectives: Upon completion of the course, participants will be able to:

- Recognize effective uses of geotechnical instrumentation in transportation projects.
- Identify benefits of instrumentation to help participants promote instrumentation programs to their teams (ultimate benefit - save money).
- Recognize the need to follow a systematic approach when planning, selecting, and executing an instrumentation program and identify the components of a systematic approach.
- Identify available instrumentation and how it is used for answering key geotechnical questions.
- Identify where to find additional information and assistance.
- Perform an evaluation of the need for and potential benefits of geotechnical instrumentation on a project.

Target Audience:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are or will be involved in the design, evaluation and construction of pavements. An undergraduate degree in engineering, geology or equivalent engineering experience in the highway/transportation field is desirable.

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Course Scheduling	Danielle Mathis-Lee	(703) 235-0528	danielle.mathis-lee@fhwa.dot.gov
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Technical Information	Peter Osborn	(401) 528-4550	peter.osborn@fhwa.dot.gov

Geotechnical

Course Number: 132042A

Course Title: Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

Fee	Length
\$400 Per Participant	3 Days (CEU: 1.8 Units)

Class Size: Minimum 20; Maximum 30

The course reference manuals "Mechanically Stabilized Earth Walls and Reinforced Soil Slopes: Design and Construction Guidelines" and "Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes" were updated in 2001 and curriculum materials were developed to provide interactive training for the adult learner.

Description:

Mechanically Stabilized Earth Walls (MSEW) and Reinforced Soil Slopes (RSS) are two modern methods of earth fill construction which are extremely cost effective and aesthetically pleasing. The basic concept behind these related methods is to combine soil, reinforcing materials made of steel or polymers and appropriate facing to produce a composite material with improved engineering properties. Both MSEW and RSS provide substantial construction time and cost savings when compared with other conventional types of earth retaining systems.

The FHWA Demonstration Project 82 was converted into this training course that will provide knowledge of and skills for implementation of mechanically stabilized earth technology in routine transportation design and construction projects. The goal of this course is to provide agencies with state-of-the-practice design tools and construction practices to initiate or continue implementation of mechanically stabilized earth technology for routine use of cost effective earth retention structures. This course would be of most benefit to persons who are involved in design and construction of earth retention structures for surface transportation projects.

Objectives: Upon completion of the course, participants will be able to:

- Recognize potential applications for MSEWs and RSS structures for use in transportation facilities.
- Prepare conceptual and basic ((i.e., for simple geometry) designs, and be able to check contractor submitted designs for walls and slopes.
- Examine and select appropriate material properties and parameters used in design.
- Calculate cost of conceptual MSEWs and RSS structures, and determine if construction is a cost-effective option.
- Select appropriate specification/contracting method(s). Prepare detailed materials and methods of construction specifications.
- Define and communicate major components of construction inspection of MSEWs and RSS structures, to confirm compliance with design.

Target Audience:

Primary audience is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. Additionally, management, specification and contracting specialists, and construction engineers interested in design and contracting aspects of MSEW and RSS structures are encouraged to attend. Attendees should have a basic knowledge of soil mechanics and structural engineering. (Note that NHI offers a 1-day MSEW and RSS Construction course (No. 132043), and the target audience of that course is construction engineers, inspectors, and technicians.)

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	Rich Barrows	(360) 619-7704	rich.barrows@fhwa.dot.gov

Geotechnical

Course Number: 132043A

Course Title: Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

Fee	Length
\$200 Per Participant	1 Day (CEU: 0.6 Units)

Class Size: Minimum 20; Maximum 30

New course available for scheduling. The course reference manuals "Mechanically Stabilized Earth Walls and Reinforced Soil Slopes: Design and Construction Guidelines" and "Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes" were updated in 2001 and curriculum materials were developed to provide interactive training for the adult learner.

Description:

Mechanically Stabilized Earth Walls (MSEW) and Reinforced Soil Slopes (RSS) are two modern methods of earth fill construction which are extremely cost effective and aesthetically pleasing. The basic concept behind these related methods is to combine soil, reinforcing materials made of steel or polymers and appropriate facing to produce a composite material with improved engineering properties. Both MSEW and RSS provide substantial construction time and cost savings when compared with other conventional types of earth retaining systems.

The FHWA Demonstration Project 82 was converted into this training course that will provide knowledge of and skills for implementation of mechanically stabilized earth technology in routine transportation design and construction projects. The goal of this course is to provide agencies with current construction practices for continued, or to initiate, implementation of mechanically stabilized earth technology for routine use of cost effective earth retention structures. This course is most beneficial to persons who are involved in construction of earth retention structures for surface transportation projects.

Objectives: Upon completion of the course, participants will be able to:

- Recognize potential applications for MSEWs and RSS structures for use in transportation facilities.
- Recognize differences between available systems and their components.
- Understand the intent of specification/contracting method(s).
- Define and communicate major components of construction inspection of MSEW and RSS structures, to confirm compliance with design.

Target Audience:

Primary audience is agency and consultant construction engineers, inspectors and technicians. Additionally, management; specification and contracting specialists; bridge/structures, geotechnical, and roadway design engineers; and engineering geologists interested in construction aspects of MSEW and RSS structures are encouraged to attend. Attendees should have a basic knowledge of soil mechanics and structural engineering. (Note that NHI offers a 3-day Design of MSEW and RSS Structures course (No. 132042), and the target audience of that course is bridge/structures, geotechnical, and roadway design engineers; and engineering geologists.)

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Geotechnical

Course Number: 132069A

Course Title: Driven Pile Foundation Inspection

Fee	Length
\$335 Per Participant	2.5 Days (CEU: 1.5 Units)

Class Size: Minimum 20; Maximum 30

The participants will receive a Participant Workbook Publication No. (FHWA NHI-03-009) that includes copies of visual aids and student exercises that closely follow the presentations, and some pertinent technical information, specification requirements, check-lists, formulas, codes, graphs, tables, etc. which will be used by the participants in class, but may also be use effectively as a reference on the job.

Description:

This course was developed to provide a basis for local, regional or national qualification for pile driving inspectors of all States. The goal of this course is to provide pile driving inspectors with the practical knowledge and accepted standard industry practices for the inspection of pile driving construction operations. This course is designed for foundation inspectors, who are responsible for or involved in pile driving operations during construction.

In order to establish a national standard for transportation personnel, this inspection course was developed based upon the existing comprehensive Florida DOT's Pile Driving Inspector's Qualification course materials, the 2000 AASHTO Bridge Construction Specifications, and FHWA/NHI course 132021 "Driven Pile Foundations - Design and Construction and course 132022 "Drive Pile Foundations - Construction Monitoring. However, the local specifications, inspection reports, plan sheets and any other local information available from the hosting agency will be discussed. The course duration includes a 3-hour qualification examination at the end of the course.

Objectives: Upon completion of the course, participants will be able to:

- Explain the inspector's role, duties and responsibilities.
- Describe the pile driving system components.
- Recognize key inspection elements of the contract documents.
- Identify proper communication and coordination with the engineer and contractor.
- Identify the key elements of a pile installation plan.
- Recognize and identify pile driving system components and tools.
- Verify tip elevations, cutoff elevations, pile penetration and length driven for vertical and battered piles.
- Perform inspection of pile driving operations and verify compliance to construction tolerances.
- Recognize "when to stop driving" based upon provided driving criteria, minimum tip or penetration and refusal guidelines.
- Verify pile condition, labeling and marking for compliance.
- Recognize and explain the difference between test piles and production piles and the various types of pile testing.
- Identify "driving" irregularities.
- Identify and document pay quantities.
- Interpret and apply applicable AASHTO specifications relating to foundation acceptance.
- List potential problems and safety issues.

Target Audience:

The target audience for this course is foundation or major structures inspectors involved in inspection of pile driving operations during construction. Additionally, project management and construction engineers in charge of pile driving construction inspection are encouraged to attend. Attendees should have completed courses in Basic Construction Plan Reading, Basic Construction Math and have high school algebra level math skills. Prerequisite courses/tests may be required by the sponsoring regional certification group.

NHI TRAINING COURSE DESCRIPTION

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Geotechnical

Course Number: 132070A

Course Title: Drilled Shaft Foundation Inspection

Fee	Length
\$335 Per Participant	2.5 Days (CEU: 1.5 Units)

Class Size: Minimum 20; Maximum 30

Description:

The Drilled Shaft Foundation Inspection course is a stand-alone training course developed to provide a basis for local, regional, or national qualification of drilled shaft foundation inspectors. The goal of this course is to provide drilled shaft foundation inspectors with practical knowledge and standard industry practices for the inspection of drilled shaft foundation construction. This course is designed to be of most benefit to foundation inspectors, who are responsible for or involved in providing inspection of drilled shafts during construction. Presentation of the course is in an interactive format so that the participants are actively involved in the learning experience. A two-hour qualification exam is administered on the third day of the course.

The course follows recommended FHWA specifications and practices for drilled shaft construction. This course may be modified to follow local agency specifications and practices, which may deviate from recommended FHWA specifications and practices.

Objectives: Upon completion of the course, participants will be able to:

- Identify and understand the role and duties of the inspector.
- Recognize key inspection elements of the contract documents.
- Identify proper communication and coordination with the engineer and contractor.
- Interpret and verify contractor compliance with drilled shaft installation plan items.
- Recognize and identify drilled shaft construction equipment and tools.
- Perform visual field verification of soil/rock material for comparison to supplied soil boring data/logs.
- Calculate percent recovery and Rock Quality Designation (RQD).
- Recognize and identify the various types of drilled shaft construction.
- Perform inspection of drilled shaft excavations for compliance to plans, construction tolerances and cleanliness.
- Recognize and explain pre-mix mineral and polymer slurry tests and various integrity tests.
- Verify reinforcing cage construction compliance including side spacers and SCL requirements.
- Determine theoretical shaft concrete volumes and develop concrete curves.
- Identify shaft "concreting" irregularities.
- Perform calculations for volume, area, circumference and elevation.
- Locate, explain, and apply applicable FHWA guide specifications/AASHTO/State DOT specifications relating to compliance.
- Identify potential problems and safety issues.
- Perform required reporting and pay quantity calculations.

Target Audience:

The primary audience is agency and consultant foundation or major structures inspectors. Additionally, project management and construction engineers in charge of drilled shaft construction inspection are encouraged to attend.

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Appendices



Affiliate Programs

The mission of the Affiliate Programs is to promote education, training, and technology sharing among local, national, and international transportation partners. This office is responsible for managing the Local Technical Assistance Program (LTAP), advancing partnerships with professional associations, furthering international professional development, and providing outreach to transportation agencies, industry and academia.

FHWA has established a network of local road coordinators one per state. This network provides for direct communication among local agencies, State Departments of Transportation (DOTs), and FHWA, to share ideas and experiences.

LTAP – Local Technical Assistance Program

LTAP fosters a safe, efficient, environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer. There are 58 LTAP centers, one in each State, Puerto Rico, and 7 regional centers serving American Indian tribal governments. LTAP along with the State DOT's and FHWA provide training, technical assistance, and innovative transportation technologies to the agencies who maintain local, rural, and tribal streets and roads.

Contact: William Evans (303) 969-5772 x330 Email: william.evans@fhwa.dot.gov

Partnership Program

FHWA has formal partnership agreements with several national associations. The Affiliate Programs is responsible for maintaining the relationships with the American Public Works Association (APWA) and the National Association of County Engineers (NACE) and carrying out the professional development aspects of all partnerships as well as outreach to industry, affiliates, and other members of the transportation community.

Contact: Al Alonzi (703) 235-0552 Email: al.alonzi@fhwa.dot.gov

International Program

The Affiliate Programs serves and supports the FHWA's Office of International Programs in coordinating and arranging for international training and professional development activities. These activities inform the U.S. transportation community of technological and innovative programs abroad, promote U.S. transportation expertise internationally, and increase technology sharing between the U.S. and the international community. This office assists the Office of International Programs in establishing and maintaining partnerships for transportation technology sharing. Current activities include train-the-trainer programs in other countries and loaned staff assignments in NHI for professionals from other countries.

Contact: Roger Dean (703) 235-0550 Email: roger.dean@fhwa.dot.gov

Workforce Development Initiatives

Retirements, high turnover and competition for workers are significantly impacting the transportation workforce. As much as 50 percent of the baby boomers at Federal, State and local levels will be eligible to retire within the next several years. Recruiting and retaining a highly qualified workforce is a priority throughout the transportation community.

OPD and NHI are working with transportation partners and stakeholders to focus on this priority through workforce studies and forums for information exchange. These activities aim to identify effective strategies and successful practices in career awareness, recruitment, training, professional development and retention.

Contact: Clark Martin (703) 235-0547 Email: clark.martin@fhwa.dot.gov

Universities and Grants Programs

The five major transportation educational initiatives of FHWA are:

Dwight David Eisenhower Transportation Fellowship Program (DDETFP)

Initiated in 1991 and re-authorized by the Transportation Equity Act for the 21st Century (TEA-21), DDETFP awards \$2 million annually in six award categories to undergraduates, graduate students and faculty. The program will award \$24 million by 2003 to prospective transportation professionals.

Contact: Ilene D. Payne (703) 235-0538 Email: ilene.payne@fhwa.dot.gov

Website: www.nhi.fhwa.dot.gov

Garrett A. Morgan Transportation and Technology Futures Program (GAMTTFP)

The GAMTTFP is a DOT - wide initiative that affords opportunities to youth and adult learners to increase awareness of transportation related skills. Since its inception in 1997, GAMTTFP has increased the awareness of math, science and transportation technology among 2 million youngsters.

Contact: Lorraine Day (202) 366-1159 Email: lorraine.day@fhwa.dot.gov

Website: education.dot.gov

Summer Transportation Intern Program for Diverse Groups (STIPDG)

Since 1991, the Summer Transportation Intern Program for Diverse Groups (STIPDG) has afforded 10 week summer college-level internships at U.S. DOT headquarters. In 1999 STIPDG was expanded to include field office placements for a maximum of 100 students annually.

Contact: Lorraine Day (202) 366-1159 Email: lorraine.day@fhwa.dot.gov

Website: www.fhwa.dot.gov/education/stipdg.htm

National Summer Transportation Institutes for Secondary Students (NSTI)

The National Summer Transportation Institutes for Secondary Students (NSTI) has provided 4-week opportunities for 9th-11th graders on 41 college campuses since 1993 to increase awareness of transportation technology.

Contact: Hattie Brown (202) 366-1591 Email: hattie.brown@fhwa.dot.gov

Website: www.nrc.scsu.edu

University Transportation Centers Program (UTCP)

University Transportation Centers Program (UTCP) funds 33 UTCs that address transportation issues and attract researchers, resources, and facilities to promote individual initiatives and scientific innovation in a variety of transportation modes and disciplines. The UTCP is funded for \$227.8 million through the duration of TEA-21.

FHWA Contact: Ilene D. Payne (703) 235-0538 Email: ilene.payne@fhwa.dot.gov

Website: utc.dot.gov

The University Transportation Education Resource Catalog (UTERC) will be published in 2001, replacing the College Curriculum Program Catalog. The UTERC will provide information on DOT and FHWA educational initiatives, offering linkages to transportation-related opportunities within and outside the agency. Copies of course materials related to the NHI Course Catalog listings may be obtained by university faculty by contacting:

Universities and Grants Programs
National Highway Institute
4600 N. Fairfax Drive, Suite 800
Arlington, VA 22203
(703) 235-0538

The following is an alphabetical listing of University Transportation Centers (UTCs). All of the centers can be accessed through the UTC web site: <http://utc.dot.gov>.

Past and Present

Assumption College

Transportation and Environmental Education for the 21st Century

City College of New York

Planning and Management of Regional Transportation Systems

George Mason University

Deployment of Intelligent Transportation Systems

Iowa State University

Sustainable Transportation Asset Management

Marshall University

Transportation and Economic Development in Mountain Regions

Massachusetts Institute of Technology

Strategic Management of Transportation Systems

Montana State University, Bozeman

Rural Travel and Transportation

Morgan State University

Transportation: A Key to Human and Economic Development

New Jersey Institute of Technology

Productivity Increases Through Transportation Improvements

North Carolina A&T State University

Urban Transit Performance in Small and Rural Areas

North Carolina State University

Transportation and the Environment

North Dakota State University

Rural and Intermodal Transportation

Northwestern University

Infrastructure Technology

Pennsylvania State University

Advanced Technologies in Transportation Operations & Management

Purdue University

Safe, Quiet and Durable Highways

Rutgers University

Advanced Transportation Infrastructure: Maintenance and Operation of High Volume Systems

San Jose State University

Policy Guidance of Transportation Management Systems

South Carolina State University

Professional Capacity Building in Transportation

Texas A&M University

Transportation Solutions to Enhance Prosperity and the Quality of Life

University of Alabama

Management of Safety of Transportation Systems

University of Arkansas

Rural Transportation

University of California, Berkeley

Transportation Systems Analysis and Policy

University of Central Florida

Advanced Transportation Systems Simulation

University of Denver & Mississippi State University

Intermodal Transportation: Assessment, Planning, and Design

University of Idaho

Advanced Transportation Technology

University of Michigan

Commercial Highway Transportation

University of Minnesota

Human-Centered Transportation Technology

University of Missouri, Rolla

Advanced Materials and Non-Destructive Testing Technologies

University of Nebraska, Lincoln

Design and Operations of Transportation Facilities and Services in Mid-America

University of Rhode Island

Surface Intermodal Transportation Systems and Advanced Transportation Infrastructure with Special Reference to the Marine Environment

University of Southern California and

California State University, Long Beach

Metropolitan Transportation

University of South Florida

Transit and Alternative Forms of Urban Transportation

University of Tennessee

Transportation Safety

University of Washington

Transportation Operations and Planning

University of Wisconsin-Madison

Optimization of Transportation Investment and Operations

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Loisteen Moore

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NEVADA

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NEW JERSEY

Center for Advanced Infrastructure and Technology - LTAP

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Joseph Orth

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www.nmshtd.state.nm.us/general/gen_depts/gen_depts_tpd/gen_depts_tpd_rb/LTAP.html

NEW YORK

Cornell Local Roads Program (New York LTAP)

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Toni Rosenbaum

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North Carolina Technology Transfer Center

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Pam Cloer

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NORTH DAKOTA

North Dakota Transportation Technology Transfer LTAP Center

North Dakota State University

Civil Engineering and Construction Dept.

Civil and Industrial Engineering Building, Room 201H

Fargo, ND 58105

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(701) 231-6185 or (701) 328-0103 (Bismarck)

donald_andersen@ndsu.nodak.edu

hardhat.cme.ndsu.nodak.edu/tttcent/index.html

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South Carolina Transportation Technology Transfer Service

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SOUTH DAKOTA

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TEXAS

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Texas Engineering Extension Service
Engineering Utilities and Public Works Training Institute

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UTAH

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Charlottesville, VA 22903

Russ Neyman

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(434) 293-1429
vtttc@vdot.state.va.us
www.vtrc.net/vtttc

WASHINGTON

Washington State Technology Transfer Center

WSDOT-Highways and Local Programs
PO Box 47390
310 Maple Park Avenue SE
Olympia, WA 98504-7390

Dan Sunde, PE

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(360) 705-6858
wst2center@wsdot.wa.gov
www.wsdot.wa.gov/TA/T2Center/T2hp.htm

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WISCONSIN

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Don Walker

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(608) 263-3160
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epdweb.engr.wisc.edu/centers/tic/

WYOMING

Wyoming Technology Transfer Center (WyT2/LTAP)

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Eugene M. Wilson

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Tribal Technical Assistance Program (TTAP) Centers

Serving Tribes in Arizona, Colorado, New Mexico, and Utah

TTAP at Colorado State University

Colorado State University
Rockwell Hall, Rm. 321
Fort Collins, CO 80523-1276;
Contact: Ronald Hall
Phone: (970) 491-8653
Fax: (970) 491-3502
E-mail: rhall@lamar.colostate.edu
Web: www.colostate.edu/Orgs/TTAP/

Serving Tribes East of the Mississippi

TTAP

Michigan Technological University
1400 Townsend Drive,
Houghton, MI 49931-1295;
Contact: Bernard D. Alkire
Phone: (906) 487-3164
Fax: (906) 487-1834
E-mail: balkire@mtu.edu
Web: www.ttap.mtu.edu

Serving Tribes in Montana, Wyoming, and the Dakotas

Northern Plains TTAP

United Tribes Technical College
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Contact: Dennis Trusty
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E-mail: nddennis@hotmail.com
Web: www.united-tribes.tec.nd.us/ttap.htm

Serving Tribes in Kansas, Nebraska, Oklahoma, and Texas

Oklahoma TTAP

Oklahoma State University
308 CITD
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Serving Tribes in Idaho, Oregon, Washington, and Western Montana

Northwest Tribal LTAP

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CITE- Consortium for ITS Training & Education

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Motor Carrier Safety - National Training Center

Kelly Kelley

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TEA-21, under Section 504(a), increased the amount of Federal-aid funds that are available to State Departments of Transportation for the express purpose of NHI education and training programs. The current legislation authorizes “½ of 1 percent of the funds apportioned to a State under section 104(b)(3) for the surface transportation program...” In addition, these funds can now be used by the States to fund travel and direct expenses, as well as training fees. This table lists amounts available, by State, for FY 2002.

The FY 2003 transportation appropriations bill was pending approval at the time of printing NHI's 2003 training catalog. Therefore, the apportionment computations of surface transportation program (STP) funds were unavailable to include in the catalog.

In the meantime, please refer to the FY 2002 STP funds available for NHI training. Once the FY 2003 apportionment computations become available, we will post the information on the NHI web site – www.nhi.fhwa.dot.gov.

State	Available Funds
Alabama	777,917
Alaska	387,089
Arizona	730,406
Arkansas	544,722
California	3,491,245
Colorado	552,649
Connecticut	423,088
Delaware	186,526
District of Columbia	160,938
Florida	2,042,602
Georgia	1,516,526
Hawaii	191,065
Idaho	259,425
Illinois	1,287,333
Indiana	1,006,959
Iowa	494,048
Kansas	539,819
Kentucky	634,355
Louisiana	581,688
Maine	197,290
Maryland	586,060
Massachusetts	599,238
Michigan	1,404,518
Minnesota	706,677
Mississippi	536,442
Missouri	893,417
Montana	291,143
Nebraska	346,158
Nevada	273,106
New Hampshire	189,897
New Jersey	790,970
New Mexico	340,773
New York	1,427,496
North Carolina	1,128,972
North Dakota	231,958
Ohio	1,306,031
Oklahoma	668,881
Oregon	474,768
Pennsylvania	1,290,836
Rhode Islands	189,252
South Carolina	723,102
South Dakota	259,709
Tennessee	854,054
Texas	3,378,635
Utah	285,705
Vermont	180,288
Virginia	1,057,332
Washington	681,426
West Virginia	292,224
Wisconsin	883,472
Wyoming	177,994
TOTAL	38,456,224

Everyone has attended training sessions where the instructor could not find the chalk, or the eraser, or the light switch when it came time to show the slides, or the room was too hot or too cold or there was not enough room for the number of participants scheduled for the course. Since there are many details to remember when preparing for and presenting a successful training course, we have compiled a few suggestions and reminders that will hopefully prevent last minute glitches. These suggestions are intended to make the job of coordinating NHI courses easier and maximize training benefits.

Checklist

1. Request for Training

Following the instructions on the form, send a Completed **On-Site Course Request Form** (FHWA 1530) to the NHI. It is also suggested that a copy be furnished to the local FHWA Division Office (See **Appendix A**). Make sure that NHI has provided at least verbal approval of the requested dates.

2. Training Site

- Selection of a training room is critical to the success of the course. Great care should be taken to select a room that will not be overcrowded, too hot or too cold, or subject to outside distractions. The instructor should contact you to provide you with any specific requirements for the training facilities.
- Reserve a training room for the duration of the course.
- Check to see if anyone else will be using the room for nighttime functions.
- Determine if books and equipment can be left in the room. Training courses, requiring special equipment or computers, must have after hours security.
- Visit the classroom to make certain it meets all of the instructor's requirements.
- Other considerations for a training room:
 - ☐ Heat or air conditioning - find out if the instructor can control these.
 - ☐ Adequate size and shape. No poles or obstructions.
 - ☐ Special arrangements for demonstrations, labs, and experiments.
 - ☐ Seating arrangements.
 - ☐ Away from kitchen, construction area or other noise distractions.
 - ☐ Electrical outlets.
 - ☐ Lighting controls - Almost every training course uses visual aids that require a projection screen. It is important to have a room where lighting can be controlled to prevent glare on the screen while not placing the room in total darkness.
- Consider the following points for using visual aids:
 - ☐ Will shades completely darken all windows?
 - ☐ Can the lights be selectively dimmed when showing slides or viewgraphs?
 - ☐ Will overhead lights shine directly on the screen?
 - ☐ Can a bulb be removed above the screen or will the blackboard be too dark?

3. Participants and Instructors

- If needed, reserve a block of hotel/motel rooms for the course participants and instructors. Some hotels will provide a free meeting room if a minimum number of participants stay at the hotel.
- Participants and instructors should be:
 - ☐ Informed of course starting and ending times
 - ☐ Advised on hotel accommodations and room rates, check out times
 - ☐ Furnished with maps
 - ☐ Advised on parking arrangements.

4. Equipment Needs

- Nothing is more frustrating to the instructor and annoying to the participants than a slide projector that will not advance, a VCR that will not play, a computer that is not connected properly and many other such disasters. All equipment should be checked out thoroughly to make certain it functions properly.

- The instructor should contact you to provide guidance on what equipment is needed, such as:
 - ☐ Slide projector with spare bulb and remote control extension
 - ☐ Overhead projector with spare bulb
 - ☐ Blank transparencies
 - ☐ Marking pens in various colors
 - ☐ Computers
 - ☐ LCD projection equipment with cables
 - ☐ Screen -- 6' x 6' or larger
 - ☐ Videotape player - VHS or Beta cassette
 - ☐ Blackboard with chalk and eraser
 - ☐ Whiteboard with drymark pens and eraser
 - ☐ Easel with flip chart paper and various colored markers
 - ☐ Pointer
 - ☐ Lectern
 - ☐ Public address system
 - ☐ Extension cords
 - ☐ Masking tape
- Check all equipment to ensure that it is working satisfactorily.

Final Arrangements

1. Two Weeks Before The Course

- Make sure an approved copy of COURSE REQUEST AND CONFIRMATION (Form FHWA 1530) has been received. If not, call Danielle Mathis-Lee at (703) 235-0528.
- Check that all training materials have arrived.
 - ☐ Participant notebooks
 - ☐ Tent Cards (large felt tip markers will be needed)
 - ☐ Evaluation forms
 - ☐ Class roster form
 - ☐ Certificates
- Other Checks:
 - ☐ Reconfirm the training facilities
 - ☐ Discuss the seating arrangements and who will set up the room
 - ☐ Discuss what time the room is unlocked/locked
 - ☐ Check if a technician is available in case of problems setting up the room or if something goes wrong during the course

2. One Week Before The Course

- Prepare directional signs to classroom
- Check the smoking policy
- Experience has shown that the best policy is no smoking in the classroom. Signs should be posted or written on the blackboard
- Find out where smoking areas are
- Determine if snacks are available
- Identify where telephones are--both for participants to make outgoing calls and to receive incoming messages
- Pass out a list of eating places for lunch, along with a map
- Decide who will welcome the participants and introduce the instructors
- Special check out arrangements may be made to coincide with the course completion time
- Determine who will prepare the certificates of training and who will pass them out at the end of the course

3. One Day Before The Course

- Set up the classroom
- Organize the participant material
- Post directional signs
- Test all equipment

4. During The Course

- Let the instructor know who to contact if he/she needs assistance.
- Provide a copy of the class roster for all course participants.
- Prepare certificates of training. The time needed to prepare them may be reduced and the appearance improved by using a computer with a graphics program and a laser printer.
- Check with the instructor at least once a day to resolve any problems.

5. After The Course

Make certain the instructor has the class roster, course evaluation forms, and application for CEU forms. The instructor is responsible for sending these items to NHI.



NATIONAL HIGHWAY INSTITUTE
ON-SITE COURSE REQUEST

Fax this Form to Danielle Mathis-Lee at (703) 235-0577

Section A - COURSE REQUEST

1. Course Information

Course Number Course Title
Length (days) Fee \$ ☐ Per Participant ☐ Per Course

2. Training Location

City State

3. Requested Date

Alternate Dates

4. Sponsoring Agency

5. Local Coordinator

Name
Street
City State Zip
Phone Fax
Email

6. Shipping Address for Materials

(Please list Street Addresses only)

Name
Street
City State Zip

7. Billing Address

Name
Street
City State Zip
Phone Fax
Email

8. Requesting Official *(if different from Local Coordinator)*

Name
Title
Phone Fax
Email
Signature _____ Date _____

X

Section B - CONFIRMATION

1. Confirmed Course Date

2. Contractor

3. Instructor

Name
Phone Fax

4. NHI Training Program Manager

Name
Phone (703) 235-0500 Fax (703) 235-0593

5. Authorizing Official

Name Danielle Mathis-Lee
Email danielle.mathis-lee@fhwa.dot.gov
Phone (703) 235-0528 Fax (703) 235-0577
Signature _____ Date _____

X

SPECIAL NOTE: The course material will be shipped directly to the local coordinator unless we are requested to do otherwise. The local coordinator should use the packing list enclosed with each shipment to inventory the material immediately upon receipt. If the course material has not arrived 2 weeks prior to the scheduled presentation or if there are any questions on the arrangements, the local coordinator should contact the NHI Training Program Manager listed in Section B.